


# Gerald Amiel Ballena

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📍 Metro Manila, Philippines

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## Experience

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### Project Technical Specialist (Contract)

*University of the Philippines, College of Public Health*

2024 – Present

- Designed and implemented dynamic metagenomics pipelines enabling accurate profiling of microbial communities.
- Automated data preprocessing workflows using Snakemake, reducing manual load by 90% when data is available while also enhancing reproducibility.
- Collaborated with multidisciplinary teams to ensure robust data analysis and visualization tailored for research publications.

## Ongoing Key Projects

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..... [GitHub Link](#)

- **Bioinformatics Workflow Development:** Designed modular pipelines for omics data analysis with a focus on quality control and scalable workflows.
- **Shannon Entropy Analysis of K-mers:** Quantified sequence complexity using entropy-based metrics for diversity assessment.
- **Pipeline Automation:** Developed tools for dependency management and alias creation to streamline workflows.

## Certifications

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- AI Fundamentals ..... Nov 2024
- Intermediate R ..... Nov 2024
- RNA-Seq with Bioconductor in R ..... Nov 2024

## Education

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### University of the Philippines Diliman

*Graduated: July 2022*

Thesis: *In silico assessment of the association of pathogenicity and metal-resistance potential of Fusarium spp.* .Pre-print Link

**Accomplishments:** DOST ASTHRDP-Scholarship

### University of the Philippines Baguio

*Graduated: June 2018*

Thesis: **Bioelectrocatalysis by Novel Electrogenic Alkaliphilic Bacteria Bacillus sp. BAB-3442 Using Dual-Chambered Microbial Fuel Cell** .....Poster Presentation (PSM 47)

## Skills

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### Programming

Python, R, Bash, Perl

Bioinformatics Tools

- **Metagenomics:** Kraken2, MetaPhlAn, HUMAnN
- **Assembly & Binning:** MEGAHIT, METAWRAP, CheckM
- **Genomics:** CLC Workbench, Roary, MinHash
- **Quality Control:** FastQC, BUSCO, QUAST
- **Trimming:** Trimmomatic, Sickle, Cutadapt
- **Phylogenetics:** RaxML, FastTree, IQ-TREE, phyML, BEAST
- **Gene Ontology:** KEGG, GOseq
- **Annotation:** Prokka, ShortBRED, EggNOG-mapper
- **Others:** DESeq2, BBMap Suite, anvio-8, SPAdes

Data Analysis & Visualization

- **Machine Learning:** scikit-learn, caret (R)
- **Visualization:** ggplot2, Plotly, Krona, Shiny, Seaborn, Tableau

Technical Skills

- **Version Control:** Git, GitHub
- **High-Performance Computing:** Slurm
- **Workflow Automation:** Snakemake, Conda, YAML
- **Virtualization:** Docker, WSL2

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References

Available only upon request and shortlisted.